Amebiasis

Section 1: ABOUT THE DISEASE

A. Etiologic Agent

Entamoeba histolytica is a protozoan parasite that should not be confused with *Entamoeba hartmanni, Entamoeba coli*, or other intestinal protozoa that do not cause amebiasis. The trophozoite is the metabolically active form (which causes symptoms), but it is not as infectious as the cyst form because it cannot survive in the environment or transit through the acidic stomach. Under some conditions, these environmentally resistant cysts form in the lower intestine and are infectious. Thus, infected persons can shed both trophozoites and cysts in stool.

B. Clinical Description

Infections can be intestinal, extraintestinal, or both. Most cases are intestinal and are asymptomatic. Symptoms, when they occur, are multiple and varied, ranging from mild abdominal discomfort and diarrhea (often with blood and mucus) alternating with periods of remission or constipation, to severe illness with fever, chills, and significant bloody or mucoid diarrhea ("amebic dysentery"). Amebic colitis may be confused with inflammatory bowel diseases such as ulcerative colitis.

C. Vectors and Reservoirs

Humans, primarily chronic or asymptomatic carriers, are the reservoir for amebiasis.

D. Modes of Transmission

This parasite is transmitted fecal-orally by ingestion of cysts. Transmission can happen via contaminated food or water or through person-to-person spread, particularly among preschool children, within households, and through certain types of sexual contact (e.g., oral-anal contact).

E. Incubation Period

The incubation period is commonly from 1–4 weeks, but it can vary from a few days to several months or years.

F. Period of Communicability or Infectious Period

The disease is communicable for as long as the infected person excretes *E. histolytica* cysts, which can continue for years. Asymptomatically infected persons tend to excrete a much higher proportion of cysts, and hence, are more likely to transmit the infection than persons who are acutely ill and who tend to excrete trophozoites.

G. Epidemiology

Amebiasis has a worldwide distribution but is rare in children under the age of five. Prevalence is higher in areas with poor sanitation (such as parts of the tropics), in institutions for the developmentally disabled, and among men who have sex with men. The estimated prevalence in the U.S. is 4%.

H. Bioterrorist Potential

This pathogen is not considered to be of risk for use in bioterrorism.

Section 2:

REPORTING CRITERIA AND LABORATORY TESTING

A. What to Report to the Massachusetts Department of Public Health (MDPH)

Report any of the following:

- Demonstration of cysts or trophozoites of *E. histolytica* in stool.
- Demonstration of trophozoites of *E. histolytica* in extraintestinal tissue, tissue biopsy, or ulcer scrapings (by culture or histopathology).
- Demonstration of specific antibody against *E. histolytica* (enzyme immunoassay [EIA] kits for *E. histolytica* antibody detection are commercially available in the U.S.)

Note: See Section 3C for information on how to report a case.

B. Laboratory Testing Services Available

The MDPH State Laboratory Institute (SLI) does not provide testing services for amebiasis. However, the SLI Reference Laboratory can forward sera to the Centers for Disease Control and Prevention (CDC) for antibody testing.

For more information about submitting sera for testing, contact the SLI Reference Laboratory at (617) 983-6607.

Section 3:

REPORTING RESPONSIBILITIES AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify whether the case may be a source of infection for other persons (e.g., a diapered child, daycare attendee, or food handler), and if so, to prevent further transmission.
- To identify transmission sources of public health concern (e.g., a contaminated public water supply), and to stop transmission from such a source.

B. Laboratory and Health Care Provider Reporting Requirements

Amebiasis is reportable to the local board of health (LBOH). The MDPH requests that health care providers immediately report to the LBOH in the community where the case is diagnosed, all confirmed or suspect cases of amebiasis, as defined by the reporting criteria in Section 2A.

Laboratories performing examinations on any specimens derived from Massachusetts residents that yield evidence of amebiasis infection shall report such evidence of infection directly to the MDPH within 24 hours.

C. Local Board of Health (LBOH) Reporting and Follow-up Responsibilities

Reporting Requirements

MDPH regulations (*105 CMR 300.000*) stipulate that amebiasis is reportable to the LBOH and that each LBOH must report any case of amebiasis or suspect case of amebiasis, as defined by the reporting criteria in Section 2A. Cases should be reported to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance and Informatics Services (ISIS) using an official MDPH *Enteric Disease Case Report Form* (found at the end of this chapter). Refer to the *Local Board of Health Timeline* at the end of this manual's *Introduction* section for information on prioritization and timeliness requirements of reporting and case investigation.

Case Investigation

1. It is the responsibility of the LBOH to complete a MDPH *Enteric Disease Case Report Form* (found at the end of this chapter) by interviewing the case and others who may be able to provide pertinent information. Much of the information required on the form can be obtained from the health care provider or from the medical record.
2. Use the following guidelines to assist in completing the form:
   a. Accurately record the demographic information, date of symptom onset, symptoms, and medical information.
   b. When asking about exposure history (e.g., food, travel, or activities), use the incubation period range for amebiasis (1–4 weeks). Specifically, focus on the period beginning a minimum of one week prior to the case's onset date back to no more than four weeks before onset.
   c. If possible, record any restaurants at which the case ate, including food item(s) consumed and date(s) of consumption. If you suspect that the case became infected through food, use the MDPH *Foodborne Illness Complaint Worksheet* (found at the end of this chapter) to facilitate recording additional information. It is requested that the LBOH fax or mail this worksheet to the MDPH Center for Environmental Health, Food Protection Program (FPP); see top of worksheet for fax number and address. This information is entered into a database to help link complaints from other cities and towns, thus helping to identify foodborne illness outbreaks.

      Note: This worksheet does not replace the MDPH Enteric Disease Case Report Form.
   d. Ask about travel history and outdoor activities to help identify where the case became infected.
   e. Ask about water sources because amebiasis may be acquired through water consumption.
   f. Household/close contact, pet or other animal contact, daycare, and food handler questions are designed to examine the case's risk of having acquired the illness from these contacts or the case's potential for transmitting it to these contacts. Determine whether the case attends or works at a daycare facility and/or is a food handler.
   g. If you have made several attempts to obtain case information but have been unsuccessful (e.g., the case or health care provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please fill out the form with as much information as you have gathered. Please note on the form the reason(s) why it could not be filled out completely.
3. After completing the form, attach laboratory report(s) and fax or mail (in an envelope marked "Confidential") to ISIS. The confidential fax number is (617) 983-6813. Call ISIS at (617) 983-6801 to confirm receipt of your fax. The mailing address is:

MDPH, Office of Integrated Surveillance and Informatics Services (ISIS)
305 South Street, 5th Floor
Jamaica Plain, MA 02130
Fax: (617) 983-6813

4. Institution of disease control measures is an integral part of case investigation. It is the responsibility of the LBOH to understand, and if necessary, institute the control guidelines listed in Section 4.

Section 4:

CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements *(105 CMR 300.200)*

Food handlers with amebiasis must be excluded from work.

Note: A case of amebiasis is defined by the reporting criteria in Section 2A of this chapter.

Minimum Period of Isolation of Patient

After diarrhea has resolved, food handling facility employees may return to work only after producing one negative stool specimen. If a case has been treated with an antiparasitic agent, the stool specimen shall not be submitted until at least 48 hours after cessation of therapy. In outbreak circumstances, a second consecutive negative stool specimen will be required prior to returning to work.

Minimum Period of Quarantine of Contacts

Contacts who have diarrhea and are food handling facility employees shall be considered the same as a case and shall be handled in the same fashion. In outbreak circumstances, asymptomatic contacts who are food handling facility employees shall be required to produce 2 negative stool specimens, 24 hours apart. No restrictions otherwise.

Note: A food handler is any person directly preparing or handling food. This can include a patient care or childcare provider. See Glossary (at the end of this manual) for a more complete definition.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Daycare

Since amebiasis may be transmitted from person to person through fecal-oral transmission, it is important to follow up on cases of amebiasis in a daycare setting carefully. General recommendations include:

- Children with amebiasis who have diarrhea should be excluded until their diarrhea is gone.
- Children with amebiasis who do not have diarrhea and who are otherwise not ill may remain in the program if special precautions are taken, or they may be excluded.

- Since most staff in childcare programs are considered food handlers, those with *E. histolytica* in their stools (symptomatic or not) can remain on site, but they must not prepare food or feed children until their diarrhea is gone and until they have 1 negative stool test (collected at least 48 hours after completion of therapy, if antiparasitic agents are given) (per *105 CMR 300.200*).

School

Since amebiasis may be transmitted from person to person through fecal-oral transmission, it is important to follow up on cases of amebiasis in a school setting carefully. The MDPH *Comprehensive School Health Manual* provides detailed information on case follow-up and control in a school setting. General recommendations include:

- Students or staff with amebiasis who have diarrhea should be excluded until their diarrhea is gone.
- Students or staff who do not handle food but have amebiasis with no diarrhea or mild diarrhea and are not otherwise sick may remain in school if special precautions are taken.
- Students or staff who handle food and have *E. histolytica* infection (symptomatic or not) must not prepare food until their diarrhea is gone and until they have 1 negative stool test (collected at least 48 hours after completion of therapy, if antiparasitic agents are given) (per *105 CMR 300.200*).

Refer to Chapter 8 of the MDPH *Comprehensive School Health Manual* for complete guidelines on handling diseases spread through the intestinal tract.

Community Residential Programs

Actions taken in response to a case of amebiasis in a community residential program will depend on the type of program and the level of functioning of the residents.

In long-term care facilities, residents with *E. histolytica* should be placed on standard (including enteric) precautions until their symptoms subside and they have a negative stool culture for *E. histolytica*. Refer to the MDPH Division of Epidemiology and Immunization's *Control Guidelines for Long-Term Care Facilities* document for further actions. A copy can be obtained on the MDPH website at www.mass.gov/dph/cdc/epii/ltcf/ltcf.htm or by calling the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850. Staff members with *E. histolytica* infection who provide direct patient care (e.g., feed patients, give mouth or denture care, or give medications) are considered food handlers and are subject to food handler restrictions under *105 CMR 300.200* (see Section 4A for more information). In addition, staff members with *E. histolytica* infection who are not considered food handlers should not work until their diarrhea is gone.

In residential facilities for the developmentally disabled, staff and clients with amebiasis must refrain from handling or preparing food for other residents until their diarrhea has subsided and they have 1 negative stool test for *E. histolytica* (collected at least 48 hours after completion of therapy, if antiparasitic agents are given) (per *105 CMR 300.200*). In addition, staff members with *E. histolytica* infection who are not food handlers should not work until their diarrhea is gone.

Reported Incidence Is Higher Than Usual/Outbreak Suspected

If the number of reported cases of amebiasis in your city/town is higher than usual or if you suspect an outbreak, investigate to determine the source of infection and the mode of transmission. A common vehicle (e.g., water, food, or association with a daycare center) should be sought, and applicable preventive or control measures should be instituted (e.g., removing implicated food items from the environment). Control of person-to-person transmission

requires special emphasis on personal cleanliness and sanitary disposal of feces. Consult with the epidemiologist on-call at the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850. The Division can help determine a course of action to prevent further cases and can perform surveillance for cases across town lines, which would otherwise be difficult to identify at the local level.

Note: Refer to the MDPH Foodborne Illness Investigation and Control Reference Manual for comprehensive information on investigating foodborne illness complaints and outbreaks. Copies of this manual have been made available to the LBOH. It can also be located on the MDPH website in PDF format at www.mass.gov/dph/fpp/refman.htm. For the most recent changes to the Massachusetts Food Code, contact the FPP at (617) 983-6712 or through the MDPH website at www.mass.gov/dph/fpp.

D. Preventive Measures

Personal Preventive Measures/Education

To prevent future exposures, recommend that individuals:

- Always wash their hands thoroughly with soap and water before eating or preparing food, after using the toilet, and after changing diapers.
- Wash the child's hands as well as their own hands after changing a child's diapers.
- In a daycare setting, dispose of feces in a sanitary manner.
- Wash their hands thoroughly and frequently when ill with diarrhea or when caring for someone with diarrhea. Hands should be scrubbed for at least 15–20 seconds after cleaning the bathroom, after using the toilet or helping someone use the toilet, after changing diapers, before handling food, and before eating.

Discuss transmission risks that may result from oral-anal sexual contact. Latex barrier protection (e.g., dental dam) may prevent the spread of amebiasis to a case's sexual partners and may prevent exposure to and transmission of other fecal-oral pathogens.

International Travel

Travelers to developing countries should:

- Drink only bottled water, carbonated water, and canned or bottled sodas. Boiling water for one minute will kill parasites, bacteria, or viruses that may be present, including *E. histolytica*. However, *E. histolytica* is not killed by low doses of chlorine or iodine; do not rely on chemical water purification tablets (such as halide tablets) to prevent amebiasis.
- Cook food thoroughly to kill parasites, bacteria, or viruses that may be present.
- Not eat fruit that has already been peeled or cut, or raw vegetables that may be contaminated.
- Drink only pasteurized milk or dairy products. Avoid eating unpasteurized dairy products or drinking raw milk. They can be contaminated with unclean water.

Note: For more information regarding international travel and amebiasis, contact the CDC's Traveler's Health Office at (877) 394-8747 or at www.cdc.gov/travel.

ADDITIONAL INFORMATION

The following is the formal CDC surveillance case definition for amebiasis. It is provided for your information only and should not affect the investigation or reporting of a case that fulfills the criteria in Section 2A of this chapter. (The CDC and the MDPH use the CDC case definitions to maintain uniform standards for national reporting.) For reporting to the MDPH, always use the criteria outlined in Section 2A.

Note: The most up-to-date CDC case definitions are available on the CDC website at www.cdc.gov/epo/dphsi/casedef/case_definitions.htm.

Clinical Description

Infection of the large intestine by *E. histolytica* may result in an illness of variable severity ranging from mild, chronic diarrhea to fulminant dysentery. Infection may also be asymptomatic. Extraintestinal infection can also occur (e.g., hepatic abscess).

Laboratory Criteria for Diagnosis

Intestinal Amebiasis	◆ Demonstration of cysts or trophozoites of *E. histolytica* in stool; or ◆ Demonstration of trophozoites in tissue biopsy, ulcer scrapings by culture, or histopathology.
Extraintestinal Amebiasis	◆ Demonstration of *E. histolytica* trophozoites in extraintestinal tissue.

Case Classification

Confirmed Intestinal Amebiasis	A clinically compatible illness that is laboratory-confirmed.
Confirmed Extraintestinal Amebiasis	A parasitologically confirmed infection of extraintestinal tissue or among symptomatic persons (with clinical or radiographic findings consistent with extraintestinal infection), demonstration of specific antibody against *E. histolytica* as measured by indirect hemagglutination or other reliable immunodiagnostic test (e.g., enzyme-linked immunosorbent assay [ELISA]).

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FORMS & WORKSHEETS

Amebiasis

Amebiasis

LBOH Action Steps

This form does not need to be submitted to the MDPH with the case report form. It is for LBOH use and is meant as a quick-reference guide to amebiasis case investigation activities.

LBOH staff should follow these steps when amebiasis is suspected or confirmed in the community. For more detailed information, including disease epidemiology, reporting, case investigation, and follow-up, refer to the preceding chapter.

- ❑ Notify the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850 to report any confirmed case(s) of amebiasis.
- ❑ For amebiasis suspected to be the result of food consumption, complete a MDPH *Foodborne Illness Complaint Worksheet* and forward to the MDPH Center for Environmental Health, Food Protection Program (FPP).
- ❑ Identify other potential exposure sources, such as a water source.
- ❑ Determine whether the case attends or works at a daycare facility and/or is a food handler.
- ❑ Identify other potentially exposed persons.
- ❑ Fill out the MDPH *Enteric Disease Case Report Form* (attach laboratory results).
- ❑ Send the completed case report form to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance and Informatics Services (ISIS).